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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KAWSAR, ABDULLAH AL

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/697,128	Applicant(s) ALVERSON ET AL.	
	Examiner ABDULLAH AL KAWSAR	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 36-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 36-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/29/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-29 and 36-56 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/29/2008 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-29 and 36-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The following claims languages are not clearly understood:

- i. Claim 1, line 10 recites "enabling forwarding" it is unclear what constitutes enabling or how it is enabled (i.e. enable flag? can be disabled?). Line 6 recites "first forward word points to the first word" it is unclear where the other forwarding words will be pointing if there is more than one forwarding word (i.e.

what constitutes where the forwarding word will be pointing? How to decide or set the forwarding location in the buffer?).

ii. Claim 36, lines 4 recite “addresses of location within the buffer” it is unclear what location is the forwarding pointer pointing to? (i.e. anywhere in the buffer? any specific location? empty locations or follows some forwarding patter?).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 49-52 are rejected under 35 U.S.C. 102(e) as being anticipated by over Soell et al.(Soell) US Patent No. 5923900.

7. As per claim 49, Soell teaches the invention as claimed including a computer-storage medium for implementing a circular buffer, comprising:

a buffer with storage locations, the buffer having a beginning and an end and having an access pointer pointing to the word to be accessed such that when the buffer is accessed the access pointer is incremented by the number of words being accessed so that the access pointer points to a location for the next access (col 1, lines 15-22; col 2, lines 44-57);

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a forwarding word adjacent to the end of the buffer (col 1, lines 23-26; lines 53-58); and
a pointer in the forwarding word pointing to the beginning of the buffer so that when the forwarding word is accessed, the access can be redirected to the beginning of the buffer (col 1, lines 23-26; col 4, lines 9-13; col 5, lines 25-32).

8. As per claim 50, Soell teaches multiple forwarding words wherein each forwarding word has a pointer to a storage location (col 1, lines 62-67; col 3, lines 42-45).

9. As per claim 51, Soell teaches each forwarding word has forwarding enabled (col 1, lines 62-67; col 3, lines 42-45).

10. As per claim 52, it has similar limitations as of claim 51 above. Therefore it is rejected under the same rational as of claim 51 above.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 36 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soell et al.(Soell) US Patent No. 5923900, in view of Badger et al.(Badger) US Patent No. 5606559.

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13. As per claim 36, Soell teaches the invention substantially as claimed including a computer system for implementing a circular buffer, the computer system having a processor, the system comprising:

a component that stores in forwarding words located adjacent to an end of the buffer addresses of locations within the buffer (col 3, lines 14-16; lines 42-60);

a component that enables forwarding in the forwarding words (col 4, lines 9-13; col 5, lines 25-32);

a component that accesses the buffer using an access pointer (col 2, lines 46-49);

a component that increments the access pointer by the number of words accessed so that the incremented pointer points to a location for the next access(col 1, lines 59-67 through col 2 lines 1; col 2, lines 53-56); and

a component that, when forwarded word is accessed, directs the access to the location within the buffer corresponding to the address stored in the accessed forwarding word (col 4, lines 9-13; col 5, lines 25-32).

Soell does not specifically disclose directs the access to the location within the buffer corresponding to the address stored in the accessed forwarding words.

However Badger teaches directs the access to the location within the buffer corresponding to the address stored in the accessed forwarding words (col 4, lines 36-67 through col 5, lines 1-10; fig: 2A, 2B).

14. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Badger into the method of Soell to have a forwarding

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words having a address location stored within the buffer. The modification would have been obvious because one of the ordinary skills of the art would utilize the forwarding word disclosed in Badger to have address of locations within the buffer to be able to point in the buffer or memory for data allocation within the allocated memory locations.

15. As per claim 48, Soell teaches the access does not include code for detecting the end of the buffer (col 4, lines 43-47).

16. Claims 1-9, 13, 22-26, 38-44 and 53-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soell et al.(Soell) US Patent No. 5923900, in view of Badger et al.(Badger) US Patent No.5606559, and further in view of Niu et al.(Niu) US Patent No. 6473818.

17. As per claim 1, Soell teaches the invention substantially as claimed including a method in a computer system for implementing a circular buffer, comprising:

providing a buffer of words having a pointer for pointing to a word within the buffer and having a size (col 2, lines 46-49; col 3, lines 31-34);

storing in a number of forwarding words, located adjacent to an end of the buffer, pointers to words in the buffer, wherein the first forwarding word points to the first word in the buffer, a maximum number of words of the buffer to be accessed at a time corresponding to the number of forwarding words (col 3, lines 14-16; lines 42-60; col 4, lines 9-13; col 5, lines 25-32);

enabling forwarding in the forwarding words (col 1, lines 23-26; lines 53-58); and

accessing a number of words starting at the word pointed to by the pointer wherein when a word within the buffer is to be accessed accessing that word directly and when a forwarding word is to be accessed, directing the access to the word within the buffer pointed to by the pointer stored in the accessed forwarding word (col 1, lines 59-67 through col 2 lines 1; col 2, lines 53-56; col 4, lines 6-8); and

incrementing the pointer by the number of words being accessed so that the buffer can be accessed without checking for the end of the buffer (col 4, lines 9-13; col 5, lines 25-32).

Soell does not specifically disclose number of forwarding words, pointers to words in the buffer (col 4, lines 36-67 through col 5, lines 1-10; fig: 2A, 2B).

18. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Badger into the method of Soell to have a forwarding words having a pointer stored within the buffer. The modification would have been obvious because one of the ordinary skills of the art would utilize the forwarding word disclosed in Badger to have address of locations within the buffer to be able to point in the buffer or memory for data allocation within the allocated memory locations.

Soell does not specifically disclose pointed to by the pointer modulo the size of the buffer.

However, Niu teaches pointed to by the pointer modulo the size of the buffer (col 7, lines 1-4).

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19. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Niu into the method of Soell to have a pointer whose value modulo a size of the buffer indicates the starting position for storing data in the buffer. The modification would have been obvious because one of the ordinary skills of the art would utilize the circular buffer with modulo operand to be able to locate the length of the buffer.

20. As per claim 2, Niu teaches the buffer is pointed to by a write pointer whose value modulo a size of the buffer indicates the starting position for storing data in the buffer (col 6, lines 54-57; lines 63-67 through col 7, lines 1-5).

21. As per claim 3, Niu teaches the buffer is pointed to by a read pointer whose value modulo a size of the buffer indicates the starting position for reading data from the buffer(col 6, lines 54-57; lines 63-67 through col 7, lines 1-5).

22. As per claim 4, Niu teaches the access is a read (col 2, lines 37-39).

23. As per claim 5, Niu teaches the access is a write (col 2, lines 32-33).

24. As per claim 6, Niu teaches the access is using a pointer (col 1, lines 43-44).

25. As per claim 7, Niu teaches the pointer is a write pointer (col 2, lines 34-36).

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26. As per claim 8, Niu teaches the pointer is a read pointer (col 2, lines 40-43).
27. As per claim 9, Niu teaches the pointer has a synchronization access mode (col 2, lines 6-12).
28. As per claim 13, Soell teaches the access does not include code for detecting the end of the buffer (col 4, lines 43-47).
29. As per claim 22, Niu teaches wherein when the access has a synchronization access mode of sync, read access to a location in the buffer is permitted only when the location is full (col 2, lines 37-43).
30. As per claim 23, Niu teaches after the read access, the location is set to empty (col 2, lines 10-12).
31. As per claim 24, Niu teaches the access has a synchronization access mode of sync, write access to a location in the buffer is permitted only when the location is empty (col 2, lines 10-12; lines 37-43).
32. As per claim 25, Niu teaches after the write access, the location is set to full (col 2, lines 10-12).

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33. As per claim 26, Niu teaches including storing a pointer to an invalid location in a location adjacent to the forwarding words with forwarding of that location enabled so that when the location adjacent to the forwarding words is accessed, an exception is raised (col 7, lines 10-12; lines 36-39).

34. As per claims 38-44, they have similar limitations as of claims 3-9 above. Therefore, they are rejected under the same rational as of claims 3-9 above.

35. As per claims 53-56, they have similar limitations as of claims 8, 3, 7 and 2 above. Therefore they are rejected under the same rational as of claims 8, 3, 7 and 2 above.

36. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soell et al.(Soell) US Patent No. 5923900, in view of Badger et al.(Badger) US Patent No.5606559, and in view of Niu et al.(Niu) US Patent No. 6473818, and further in view of Johnson et al.(Johnson) US Patent No. 4887204.

37. As per claim 10, Soell in view of Niu do not specifically disclose the synchronization access mode is sync.

However, Johnson teaches the synchronization access mode is sync (col 7, lines 44-46).

38. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Johnson into the combined method of Soell and Niu to

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have synchronization mode. The modification would have been obvious because one of the ordinary skills of the art would want to be able to utilize the synchronization method to be able to read/write on the memory buffer without overwriting modifying any data.

39. As per claim 11, Johnson teaches the synchronization access mode is normal (col 7, lines 62-65).

40. As per claim 12, Johnson teaches the synchronization access mode can be set (col 7, lines 36-38).

41. As per claims 45-47, they have similar limitations as of claims 10-12 above. Therefore they are rejected under the same rational as of claims 10-12 above.

42. Claims 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soell et al.(Soell) US Patent No. 5923900, in view of Badger et al.(Badger) US Patent No.5606559, and in view of Niu et al.(Niu) US Patent No. 6473818, as applied to claim 1 above, and further in view of Ray et al.(Ray) US Patent No. 5974483, in view of Rahman et al.(Rahman) US Patent No. 5805878.

43. As per claim 14, Soell, Badger and Niu do not specifically disclose when adding data to the buffer, receiving an indication of data to be written, the data having a size; fetching a write

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pointer; adding an indication of the size of the data to the write pointer; and copying the data into the buffer starting at a location indicated by the fetched write pointer.

However, Ray teaches when adding data to the buffer, receiving an indication of data to be written, the data having a size(col 4, lines 54-56; col 5, lines 15-16);

adding an indication of the size of the data to the write pointer(col 3, lines 42-44); and

copying the data into the buffer starting at a location indicated by the fetched write pointer (col 4, lines 47-53).

It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Ray into the combined method of Soell, Badger and Niu to have indication of size of the data to be written. The modification would have been obvious because one of the ordinary skills of the art would implement the method of Ray to know the size to be able to manage the data allocation.

Ray does not specifically disclose fetching a write pointer.

However, Rahman teaches fetching a write pointer (col 3, lines 2-5).

44. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Rahman into the combined method of Soell, Badger, Niu and Ray to have a fetch operand to fetch pointers. The modification would have been obvious because one of the ordinary skills of the art would implement fetching to be able to get a read or write pointer according to need and fetch operand assures getting the write pointer.

45. As per claim 15, Rahman teaches the fetching and adding includes executing a fetch and add operation (col 2, lines 64-67 through col 3, lines 1-5).

46. As per claim 16, Ray teaches when the copying would occur in a word located past an end of the buffer, the copying automatically circles to the other end of the buffer (col 1, lines 50-55; lines 59-63).

47. As per claim 17, Niu teaches the adding includes calculating a modulo of a sum of the addition and a size of the buffer (col 6, lines 63-67 through col 7, lines 1-5).

48. As per claim 18, Ray teaches when reading data from the buffer, receiving an indication of a location where read data is to be stored (col 5, lines 3-5);

reading a size of the data to be read from the buffer (col 5, lines 16-17); and

copying data from the buffer to the indicated location (col 5, lines 3-6).

Ray does not specifically disclose fetching a read or write pointer.

However, Rahman teaches fetching a write pointer (col 1, lines 21-24; col 2, lines 64-67 through col 3, lines 1-5).

fetching a read pointer (col 1, lines 21-24; col 2, lines 64-67 through col 3, lines 1-5);

49. As per claim 19, Niu teaches setting the read pointer to a sum of the read pointer and the size of the data modulo a size of the buffer (col 6, lines 63-67 through col 7, lines 1-5).

50. As per claim 20, Niu teaches the read pointer is accessed with a synchronization access mode of sync col2, lines 10-12).

51. As per claim 21, Niu teaches wherein the data is read from the buffer using an access control mode of the read pointer (col 2, lines 40-43).

52. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soell et al.(Soell) US Patent No. 5923900, in view of Badger et al.(Badger) US Patent No.5606559, and in view of Niu et al.(Niu) US Patent No. 6473818, as applied to claim 1 above, in view of Drews (Drews) US Patent No. 5867734.

53. As per claim 27, Soell, Badger and Niu do not specifically disclose the buffer is accessed by multiple readers and writers.

However, Drew teaches the buffer is accessed by multiple readers and writers (col 2, lines 4-5).

54. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Drews into the combined method of Soell, Badger and Niu to have the buffer is accessed by multiple readers and writers. The modification would have been obvious because one of the ordinary skills of the art would have multiple readers and writers to the buffer to accommodate multiple consumer and producers for accessing the buffer for data.

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55. As per claim 28, Drew teaches the buffer is accessed by multiple producers (col 1, lines 16-20).

56. As per claim 29, Drews teaches the buffer is accessed by multiple consumers (col 1, lines 16-20).

57. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soell et al.(Soell) US Patent No. 5923900, in view of Badger et al.(Badger) US Patent No.5606559, and in view of Drews (Drews) US Patent No. 5867734.

58. As per claim 37, Soell does not specifically disclose the buffer is accessed by multiple readers and writers.

However, Drew teaches the buffer is accessed by multiple readers and writers (col 2, lines 4-5).

59. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Drews into the combined method of Soell and Badger to have the buffer is accessed by multiple readers and writers. The modification would have been obvious because one of the ordinary skills of the art would have multiple readers and writers to the buffer to accommodate multiple consumer and producers for accessing the buffer for data.

Response to Arguments

60. Applicant's arguments filed 09/29/2008 have been fully considered but they are not persuasive. Applicant's argument regards to claim 1 and 36 are moot in view of new grounds of rejection.

61. In the remarks applicant argues:

As to claim 49 Soell fails to teach "how its technique determines that an access has extended beyond the last entry of the buffer".

62. Examiner respectfully disagree with applicant:

Applicant supports his argument mentioning that Soell does not teach extending access beyond the last entry of the buffer. Applicant mentions in his argument page 17 "When the end of the buffer is reached, Soell's technique may automatically set in pointer to the first position of the buffer." and does not provide any indication that a forwarding word or any information is stored adjacent to the end of the buffer. Examiner respectfully disagrees with the applicant. The claim limitation is broad and does not specify that there are entries that could be accessed or have information stored on them past the end of the buffer. Applicant does not disclose in the claims storing any information past the end of the buffer or having any access past the end of the buffer except a pointer pointing to the beginning of the buffer. The claim limitation reads like any other circular buffer having a pointer at the end of the buffer for wrap-around function to be able to detect the end of the buffer and wrap-around to the beginning of the buffer and does not disclose having

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multiple more additional locations that have information stored on them to point to the specific locations to the other end of the buffer as applicant discloses in the explanation of the invention in remarks page 11-13 without checking for the wrap-around pointer.

Conclusion

63. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDULLAH AL KAWSAR whose telephone number is (571)270-3169. The examiner can normally be reached on 7:30am to 5:00pm, EST.

64. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

65. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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